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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,910	05/18/2006	David R Smith	101.0147US/PCT	1014

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EXAMINER
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BOMAR, THOMAS S

ART UNIT	PAPER NUMBER
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3676

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08/18/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/525,910	<b>Applicant(s)</b> SMITH ET AL.	
	<b>Examiner</b> Shane Bomar	<b>Art Unit</b> 3676	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 February 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 110-138 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 110-138 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 119, 120, 133, and 134 are objected to because of the following informalities: in each of the claims, it is suggested that the recitation of “a downhole tool” be replaced with --at least one of the plurality of downhole tools-- for proper antecedent basis and clarity. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 110-138 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In each of claims 110 and 127, the preamble states that the downhole tools are actuated by light. However, the bodies of the claims suggest that the tools are actuated by an optical signal and there is no recitation at all of light in either of the claim bodies. It is suggested that light at least be tied to the recitation of “optical signal” in each of the claims to alleviate this issue. All other claims depend from one of these claims and are thus also considered to be indefinite.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 110-124 and 127-136 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,413,045 to Miszewski.

Regarding claims 110 and 127 (as best understood), Miszewski discloses a system and method to actuate downhole tools by light, comprising: a downhole tool adapted to be deployed in a wellbore; an optical transmitter 6 optically connected to the downhole tool through an optical fiber; the optical transmitter adapted to transmit an optical light signal, such as a laser, through the optical fiber; and wherein the downhole tool is activated in response to reception of the optical signal (Figs. 1-7; col. 3, lines 22-47).

Regarding claims 111-113 and 128, the signal has a specific number of pulses, has a specific time duration, and at least a specific frequency (col. 3, lines 35-58; col. 5, lines 66-68).

Regarding claim 114, the tool is at least a perforating gun (col. 6, lines 12-15).

Regarding claims 115-116, a receptor 4 receives the optical signal, verifies the optical signal is a valid triggering signal, and subsequently enables the activation of the downhole tool, wherein: the receptor is connected to and thus comprises a microprocessor, storage, and a controller 12/15; the valid triggering signal is stored in the storage; the microprocessor compares the optical signal to the valid triggering signal; and the microprocessor activates the controller

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when the optical signal matches the stored valid triggering signal (col. 3, lines 35-47; col. 6, lines 4-19).

Regarding claims 117, 118, and 132, a plurality of downhole tools 2 and 8 are functionally connected to the optical fiber so that each of the downhole tools may be activated in response to the reception of the optical signal, wherein a different signal activates different tools (Fig. 7; col. 5, lines 22-40; wherein a first laser activates tool 8, and a second laser activates tool 2).

Regarding claims 119, 120, 133, and 134, splitter 4 acts as both a filter and a coupler so that only a specific wavelength can pass to the downhole tool (col. 3, lines 35-47).

Regarding claims 121 and 135, the optical signal is received by at least one photodiode, or photocell (not shown in figures); the at least one photodiode converts the optical signal into electrical energy; and the electrical energy is transmitted to an initiator/discharge circuit to activate the downhole tool (col. 5, lines 22-41).

Regarding claims 122-124 and 136, the explosive device 2 is the downhole tool and comprises a chemical chamber that contains an optically reactive substance 3 that reacts, or explodes, when the laser strikes it to activate the downhole tool 2 (col. 3, lines 22-45).

Regarding claims 129-131, the tool is on coiled tubing 30, that is part of the permanent completion (e.g., the platform), and the tool is part of a logging system (Fig. 1; col. 6, lines 4-19).

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***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 126 and 138 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miszewski in view of US 6,394,184 to Tolman et al.

Miszewski does not specifically teach that a casing collar locator is used to determine the depth of the tool.

Tolman et al teach a perforating system and method similar to that of Miszewski, wherein it is further taught that a casing collar locator is used to determine the depth of the tool (col. 15, lines 17-25). Thus, at the time of the invention, it would have been obvious to one of ordinary skill in the art to try the casing collar locator of Tolman et al with the system and method of Miszewski to achieve the predictable result of precise depth control.

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9. Claims 125 and 137 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miszewski in view of US 5,730,940 to Nakagawa.

Miszewski teaches a laser source for an optical signal, but does not specifically teach that the optical signal is converted into an electrical signal and is then transmitted into a piezoelectric stack that expands when exposed to electrical energy; and the expansion of the stack is used to activate the downhole tool.

Nakagawa teaches a laser source for an optical signal similar to that of Miszewski, wherein it is further taught that the optical signal is converted into an electrical signal and is then transmitted into a piezoelectric stack that expands when exposed to electrical energy (col. 7, lines 3-19). Thus, at the time of the invention, it would have been obvious to one of ordinary skill in the art to try using the optical signal conversion and expanding piezoelectric stack of Nakagawa as a means for activating a downhole tool of Miszewski (see at least the Abstract of Deaton to show it is well known to activate downhole tools with expandable piezoelectric elements).

### ***Conclusion***

10. The prior art made of record on form 892 and not relied upon is considered pertinent to applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shane Bomar whose telephone number is (571)272-7026. The examiner can normally be reached on Monday-Thursday from 6:30am to 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer H. Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shane Bomar/  
Examiner, Art Unit 3676